captured. The expected marker locations, expected marker sizes and/or expected artifacts can be calculated as expected values. This makes it possible to read out only relevant image sections in which markers are expected, to blank out non-specific reflexes or to predict a mutual obscuring of markers. Hereby, it is possible to enhance the accuracy and speed in the image evaluation. To this end, according to the invention, the corresponding information is delivered from the prediction device 5 directly to the image recording device 1 and/or to the respective computing device 2 allocated to the image recording device 1.

A particularly appropriate use of the information retransfer according to the invention is shown in the form of a data flow chart in Figure 2. Identical components are marked with the same reference signs. Here, a lighting device is allocated to the image recording device 1, the lighting device having a control unit 8 with a driver stage, a light emitting device 9 divided into a plurality of segments and a beam deflecting device 10. The light emitted from the segments of the light emitting device 9 is distributed by means of diffractive or refractive elements of the beam deflecting device 10 in different spatial directions. With a lighting device of this type it is possible to illuminate the markers 4 in such a way that they are imaged with optimum brightness by the image recording device 1. To this end, according to the invention, data is retransferred not only to the image recording device 1 and the computing device 2 allocated to said recording device, but also to said control unit 8 of the lighting device.

Selected data, such as luminosity information from the first processing stages, said image recording device 1 and the allocated computing device 2 is buffered for a short

time in a memory 7 and then also forwarded to said control unit 8 of the lighting device. Based on the transferred data, for example, expected marker positions (refer to Figure 1) and marker luminosity, the driver stage of said control unit 8 can access the individual segments of said light emitting device 9 with selectable luminous power. By means of the succeeding light deflecting device 10, each segment of the lighting device can then illuminate another part of the image field of the associated image recording device 1. Thereby, the spatial distribution of the illumination can be adjusted optimally from image to image.

It is also possible to forward only the information about the distances of said markers 4 to said control unit 8 of the lighting device and depending on the distance and the type of said markers 4, to control the luminous power and distribution. The access values required for this purpose can be taken from a look-up table which has been prepared by previous laboratory experiments.

In the embodiment of the lighting adjustment for passive markers according to the invention, it is advantageous to control the respective luminous intensity in such a way that the luminosity of the imaged markers lies within the dynamic range of said image recording device 1, for example, at a value of 80 percent of the upper dynamic limit.

The retransfer of relevant information according to the invention, increases in a tracking system the precision and speed of the evaluation of the resulting data.